



Tech
Insights

Safety as the Foundation for a New Payments Frontier

Roger C. Lanctot, Director
Automotive Connected Mobility

Autonomous Vehicle Channel | Market Analysis

www.techinsights.com

Authoritative Semiconductor & Microelectronics Intelligence Platform

Leveraging a unique reverse engineering competency, we reveal innovations in technology products that provide advanced technical and market analysis to organizations that will help guide them to make fact-based technology and intellectual property decisions.



Reverse Engineering

We help decision makers in semiconductor, system, financial, and communication service provider companies make more informed decisions on their product roadmaps with competitive technical intelligence.

We help supply chain and procurement professionals to more effectively negotiate with suppliers and understand true costs of technology products.

We collaborate with IP professionals in global technology companies, licensing entities and legal firms to plan strategies on the assertion/defense of their patent portfolios and licensing negotiations.



Market Analysis

We help business and technology leadership de-risk strategic investment and procurement decisions with visibility into semiconductor manufacturing, silicon demand, and capacity.

We enable more informed decision-making for product and market strategy with curated insight into the performance, application, and functionality across individual SoCs and aggregated across market segments.

This is all supported by building out stronger products from acquisitions (The Linley Group, VLSI and most recently with Strategy Analytics. Read more about Strategy Analytics [here](#)).



Spend Insights

We help competitive analysis teams at OEMs and component suppliers to understand design philosophies and BOM costs through deep-dive hardware teardowns of consumer electronics devices. This is delivered through the world's largest library of independent and nonbiased teardowns.

We help supply chain and category management teams to understand pricing and lead-time trends for the commodity electronic components that engineers are selecting for new designs.

The Automotive Industry Has Had Its Heart Broken



A New Paradigm?



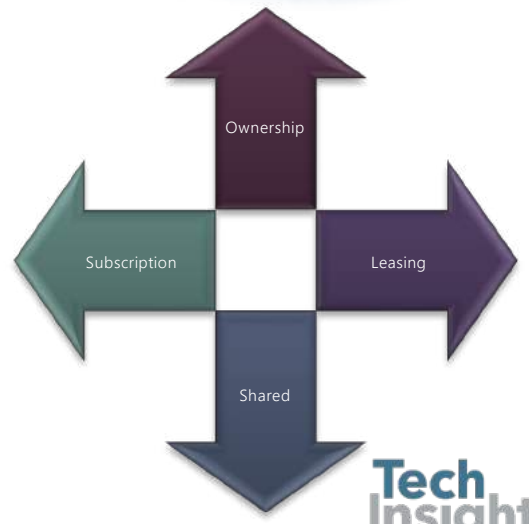
Buy now with 1-Click

Economic context:



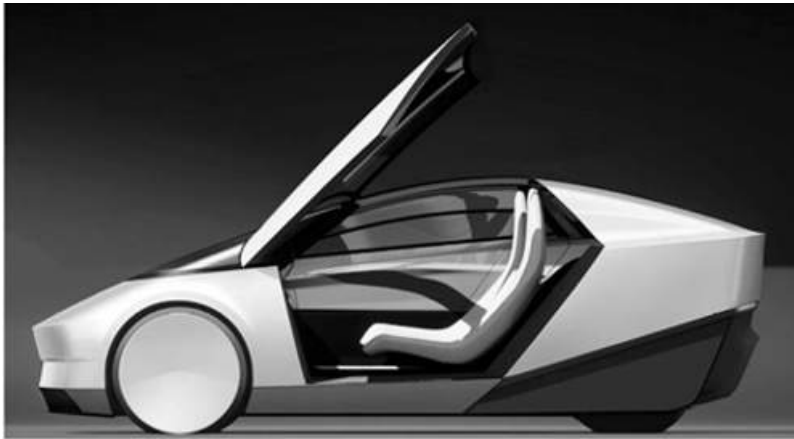
Real wages forecast to 'shrink' over the next two years

Alan Jones, PA Industrial Correspondent
Fri, July 15, 2022 at 12:01 a.m. · 1 min read



Note: Excludes US battery electric vehicles (BEV) only. Excludes any representation and its use outside actual prices or usage. Black labels = currently available, green labels = forthcoming models with expected pricing and timeline released. Blue labels = announced but without details. Orange labels = based on manufacturer statements, not on any specific lead cycle.

Ownership in the Crosshairs?



TODAY'S AGENDA - AVS

01

Architecture / Software Impact Assessment

ECU Consolidation / Domain and Zonal Architecture Trends / Software Strategies

02

ADAS Demand Trends

General Overview/ Forecast for ADAS, Sensors and Semiconductors

03

Autonomous Vehicles Update

Forecast Scenarios Through 2050 / Hurdles for AV Development

04

Conclusions / Q&A

TODAY'S AGENDA - AVS

01

Architecture / Software Impact Assessment

02

ADAS Demand Trends

03

Autonomous Vehicles Update

04

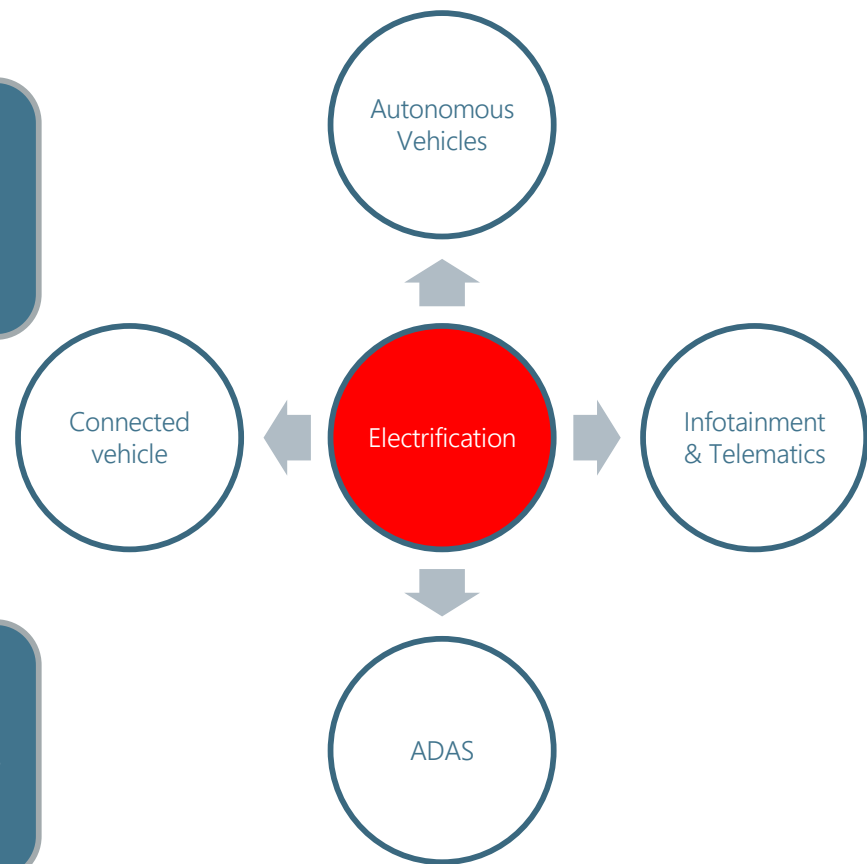
Conclusions / Q&A

Automotive Industry Key Trends

New xEV platforms are at the leading edge of technological change

- This is because they are new platforms and not specifically because they are xEV.
- Move to xEV bringing its own opportunities also, driving power electronics content and move towards wide bandgap technologies

Will underpin adoption of ADAS/automated driving, telematics and 5G connectivity.

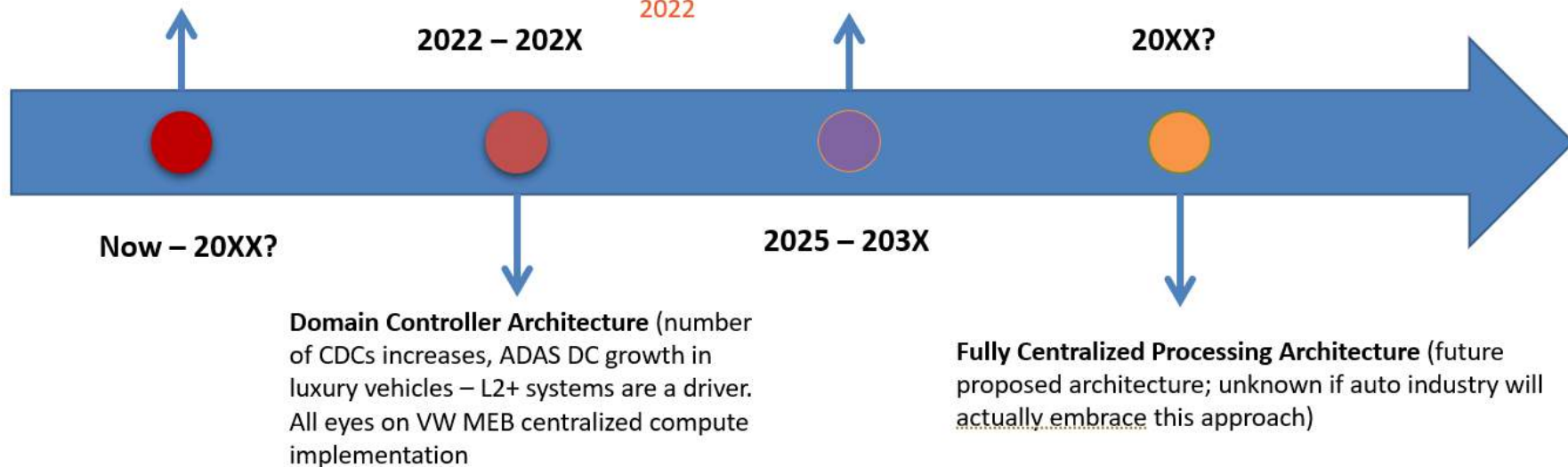


ADAS Centralized Processing

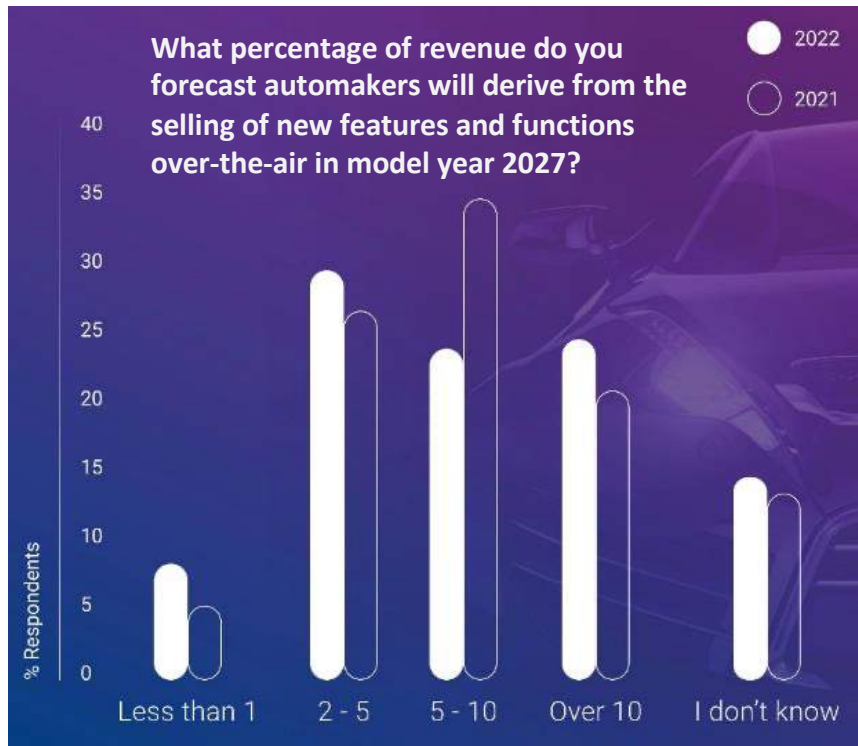
Distributed EE Architecture
(limited domain consolidation, primarily via CDCs, some ADAS DC). Will continue to exist in the market for many years yet

Location or zone-based EE Architecture (select, premium OEMs begin shift to zone-based architecture. L2+ and higher likely to be zone or domain based). Aptiv launching with European OEM in 2022

Major Tier 1s told SA that centralized processing is a core trend – high speed backbones (Ethernet, etc. needed)



\$450B OTA Software Market to Play For?

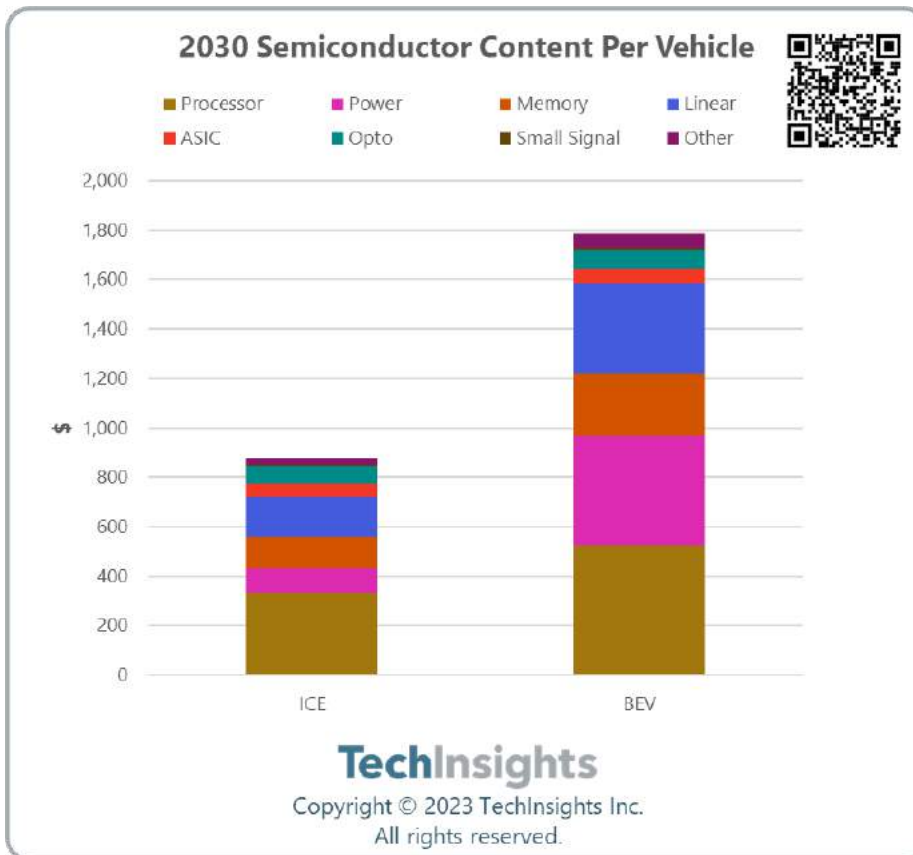


Source: [2022 Automotive Software Survey](#)

- Our survey suggests OEMs could make an additional 10% of revenues from selling features OTA in 2027
- 100 million cars x \$45k per car x 10% = \$450B

Key question: How do I get my fair share (or more!) of this \$450 billion ?

How Big is the Difference in 2030?



Source: Derived from [Automotive Semiconductor Demand Forecast 2021 to 2030 - July 2023](#)

TechInsights CONFIDENTIAL. All content © 2023 TechInsights Inc. All rights reserved.

- Compared to a conventional gasoline model, a 2030 Battery Electric Vehicle will have:
 - 2.0 x the overall semiconductor content
 - 1.6 x the processor content
 - 1.9 x the content for the most powerful SoCs
 - 0.6 x the content of 8-bit microcontrollers
 - 4.4 x the power semi content
 - 2.2 x the linear content
 - 2.0 x the memory content
- Huge opportunities in power semiconductors, especially wide band-gap materials such as SiC and GaN
 - More modern EV platforms mean overall higher processor usage due to new architectures with Zonal/Domain controllers
 - Higher linear usage is mainly analog-to-digital converters (ADC) in battery packs

TODAY'S AGENDA - AVS

Autonomous Vehicles Service 2023 Update

01

Architecture / Software Impact Assessment

02

ADAS Demand Trends

03

Autonomous Vehicles Update

04

Conclusions / Q&A

OEM ADAS split into Safety and Convenience Applications

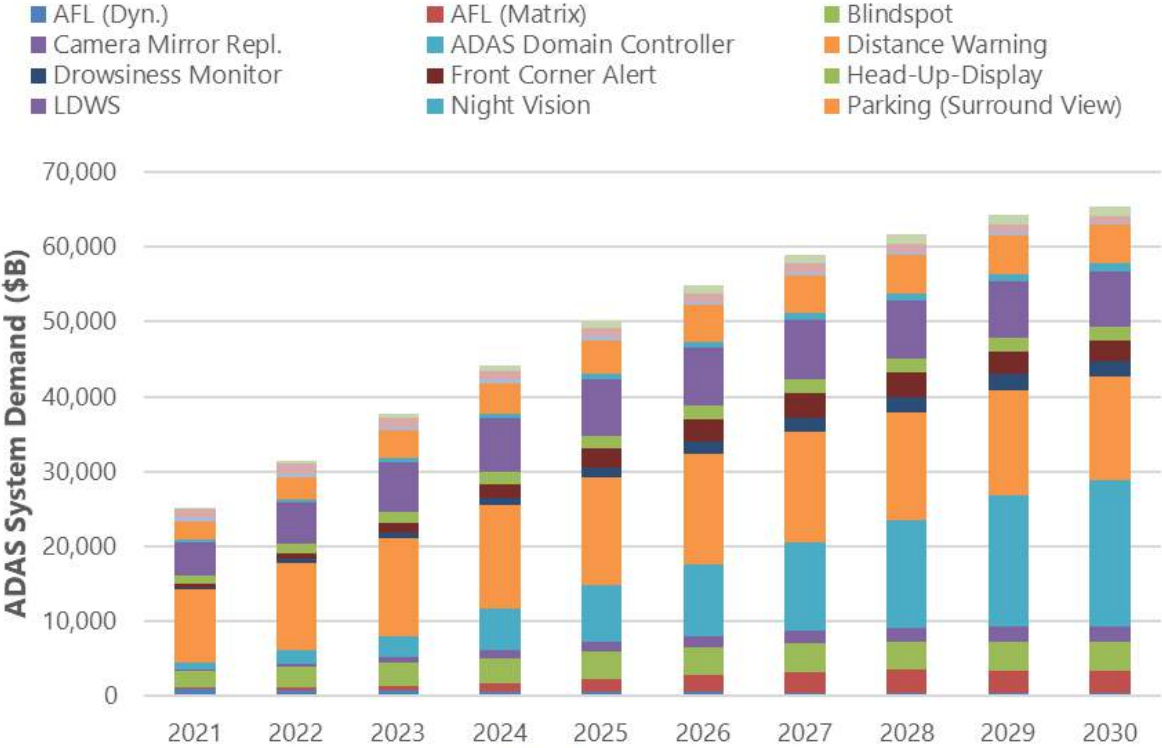


- NCAP Mandate/ "soft mandate" 5-star requirements drive low-end ADAS
 - Large volumes but incredibly strong cost pressure from OEMs
- Consumers expect safety systems as standard equipment
- Governments mandating what was "Advanced" a few years ago (AEB, LDWS/LKA)



- ADAS features that can be sold as an option or option/subscription
 - Recurring subscription revenue a goal of many OEMs
- This is where so-called L2+ systems and L3 systems are today
 - Ford, GM, NIO, Tesla and Volvo charge a subscription fee for L2+ solutions

Global ADAS Demand \$65B by 2030



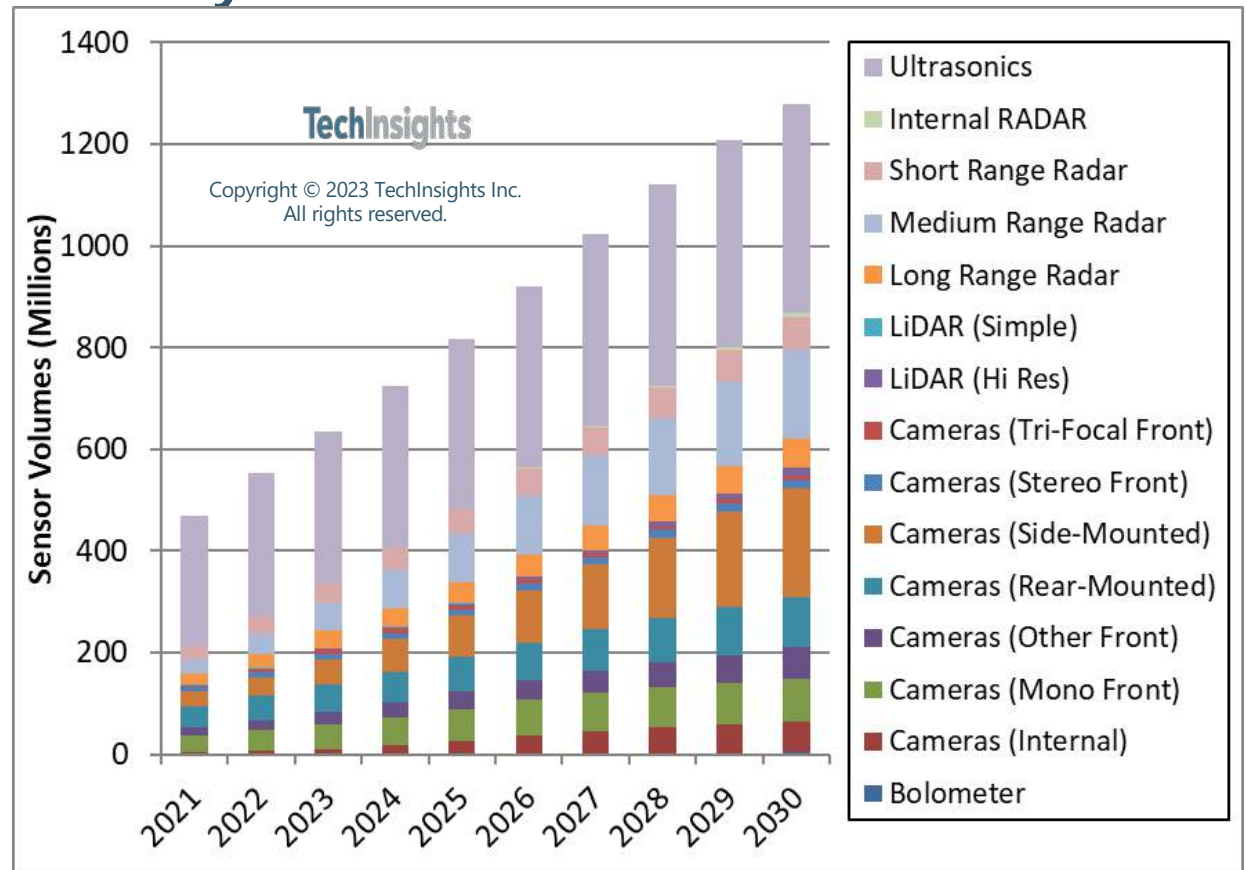
- This is the TAM for T1 suppliers
- Unprecedented dip in 2020
- Best combination of growth/size remains in Distance Warning
 - AEB is the key feature in that category
- ADAS domain controller at 21+% penetration in 2030

TechInsights
 Copyright © 2023 TechInsights Inc. All rights reserved.



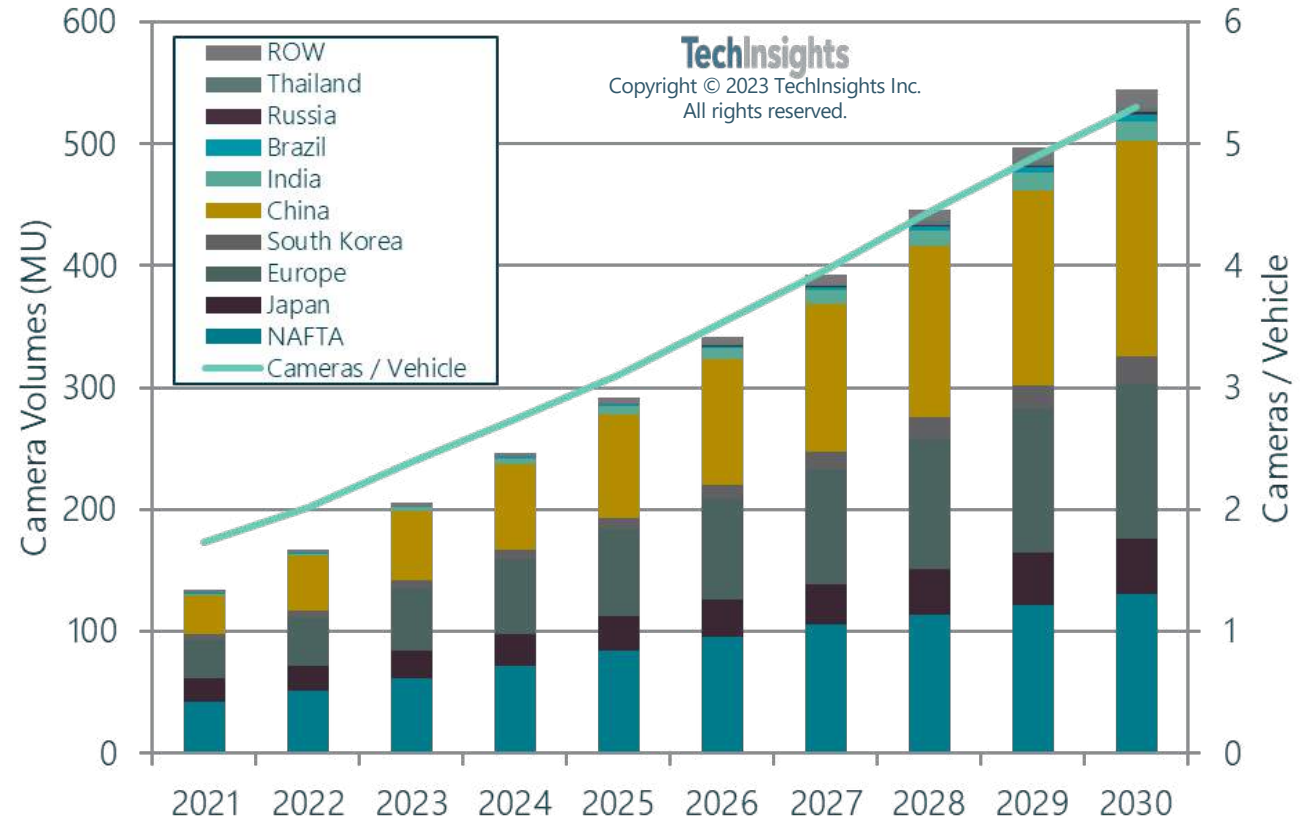
> 1 Billion ADAS Sensors by 2028

- Growth for almost all sensor types
- Fastest growth in cameras is for internal units for DMS/OMS
- LiDAR and bolometer markets still expected to be very small in unit terms relative to other sensors



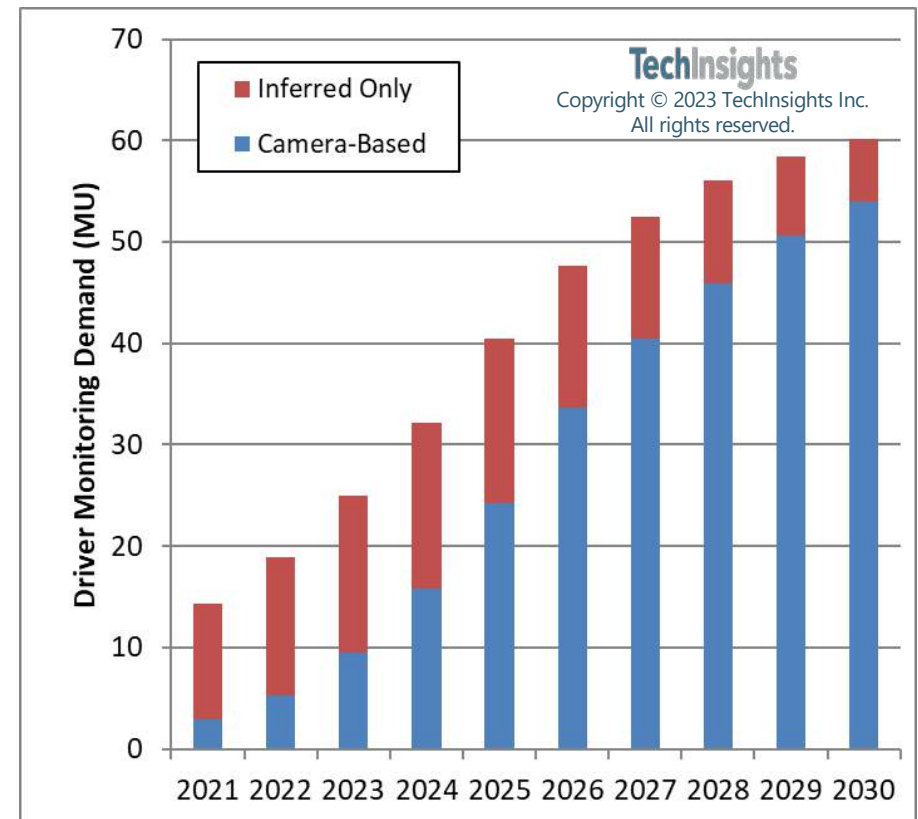
> 400 Million Cameras by 2028

- Average number of cameras per vehicle continues to grow
- Cameras are the base sensor for most ADAS applications
- Machine vision technologies now starting to be applied to other cameras as well...



Driver Monitoring

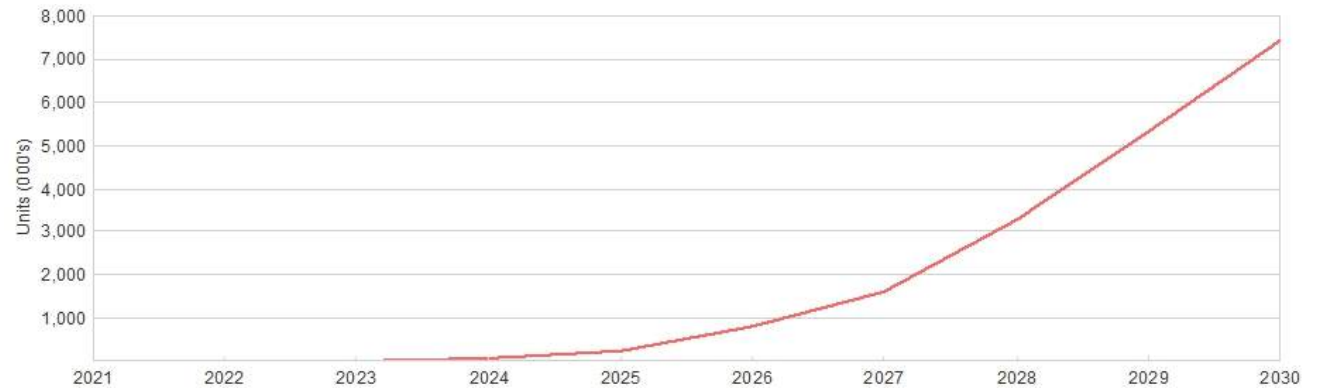
- TechInsights sees the market following **three generations**:
 1. Solutions on dedicated hardware – this is where we are now. \$20 is cost target for 2D monocular camera-based system
 2. Solutions that are effectively “software only”, and which are hosted on a shared ECU
 3. Transition from DMS to multi-seat ODS
- Conventional **camera** remains the preferred approach. ToF-based sensors remain niche for now (costly, bulky, lack of resolution vs. camera based solutions), RADAR emerging.
- For Gen 1 & Gen 2 the **KEY task** is driver monitoring
 - Everything else (ID, emotion, health) is secondary. There is potential here to add value and allow OEM to increase margin via optional features – but these are not the core tasks, and OEMs need to be wary of re-creating feature sets which are better implemented on wearables at a lower price
 - **“Every OEM is asking for emotion analysis, but no-one seems to know what they want to do with it”** – EU-based algorithm vendor



Occupant Monitoring Systems – RADAR Emerging

- OMS sensors incorporated in a growing number of vehicles, still a small market
- Changing NCAP or NHTSA regulations may boost in-cabin RADAR applications
- OEMs familiar with and understand camera-based OMS
- Low-cost solutions are sought to meet NCAP
- CES 2023 - In-cabin RADAR solutions from: Asahi Kasai, Bosch, HL Klemove, Infineon, Murata, Garmin, NXP and VinFast/Vayyar.
- Many solutions are fusing camera and RADAR data

Interior RADAR Forecast



Source: Bosch

Other Automotive OEM Sensor Suite



- Toyota Teammate Advanced Drive - Stereo camera (Denso) , RADAR (Denso), 4X LiDAR (1 Denso/Luminar, 3 Continental), DMS, HD Map, HUD, 4G connectivity, OTA updates



- Honda Sensing Elite - L3 system in the Japanese market Legend model incorporates two cameras, 5X LiDAR, 5 RADAR, DMS, HD map



- GM Ultra Cruise - cameras, radars and LiDAR (Cepton) "Approximately 70% more" sensors than used by Super Cruise



- Mercedes-Benz DRIVE PILOT L3 sensor suite includes stereo forward camera, 4x surround cameras, LRR, 4x SRR, LiDAR, 12x ultrasonic, DMS, Moisture sensor, microphones



- Lucid – DreamDrive – 32 sensors including Camera, RADAR, LiDAR and ultrasonic



- NIO - Aquila Super Sensing – 33 sensors including: LiDAR, 7x 8MP cameras, 4x surround view cameras, DMS, 5x RADAR, 12x ultrasonic, GPS, IMU and V2X.



- Xpeng – "L3 Autonomy Ready" 2x LiDAR, 14x cameras, 12x ultrasonic sensors, and 5x millimeter-wave radars



- Polestar 4 - Pilot Assist- 12X camera inc. DMS, 5X RADAR, 1X LiDAR; 12X Ultrasonic, 3X EyeQ 6 High, REM map

Systems lacking LiDAR – SAE L2 Systems



- Nissan ProPILOT 2.0 - 7 cameras in total including trifocal windshield Camera (ZF/Mobileye), 5X Radar, 12x Ultrasonic, DMS, HD Map



- Fisker Intelligent Pilot- surround-view 4x camera suite, a camera-based driver-monitoring system, ultrasonic technology, and a Digital-Imaging Radar by Uhnder

What about 5G?

- A. Enhanced Mobile Broadband - eMBB
- B. Ultra Reliable Low Latency Communications - URLLC
- C. Massive Machine Type Communications - mMTC
- D. Network Slicing
- E. C-V2X

Why is 5G important?

- A. Safety relevance
- B. Future proofed
- C. Enhanced performance for safety, infotainment
- D. Multi-modal communications
- E. Tele-operations
- F. Satellite?

What is the future of connectivity?

- A. Software/Content OTA
- B. Streaming content
- C. In-vehicle contextual advertising/marketing
- D. In-vehicle payment platforms
- E. Transition from voice recognition to generative AI

What is car connectivity now?

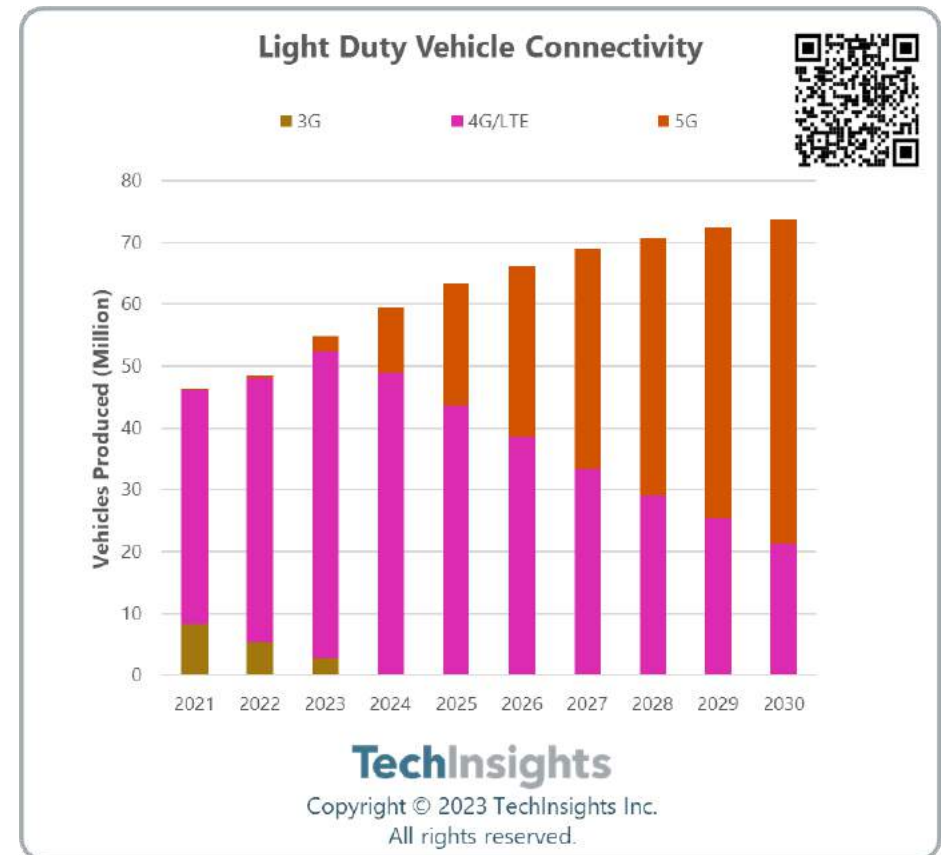
- A. Daimler reprovvisions AT&T connected cars to T-Mobile
- B. BMW preparing to reprovise T-Mobile to Verizon
- C. GM requires 3 years of OnStar (\$1,500) – then backs off
- D. Toyota offers 10 years of car connectivity free
- E. Mercedes, Volkswagen, GM shifting to embedded connectivity and away from projected smartphones – all three emphasizing streaming content, in-vehicle gaming, video conferencing, social media – in

What do car companies want?

- A. A single global connectivity platform
- B. Best connection at all times
- C. Carrier independence
- D. Integration of vehicular and non-vehicular connectivity
- E. Unlimited automotive wireless data plans
- F. More reliable/comprehensive coverage
- G. Prioritization of automotive (safety) applications

The Software-Defined Car is Built on Connectivity...

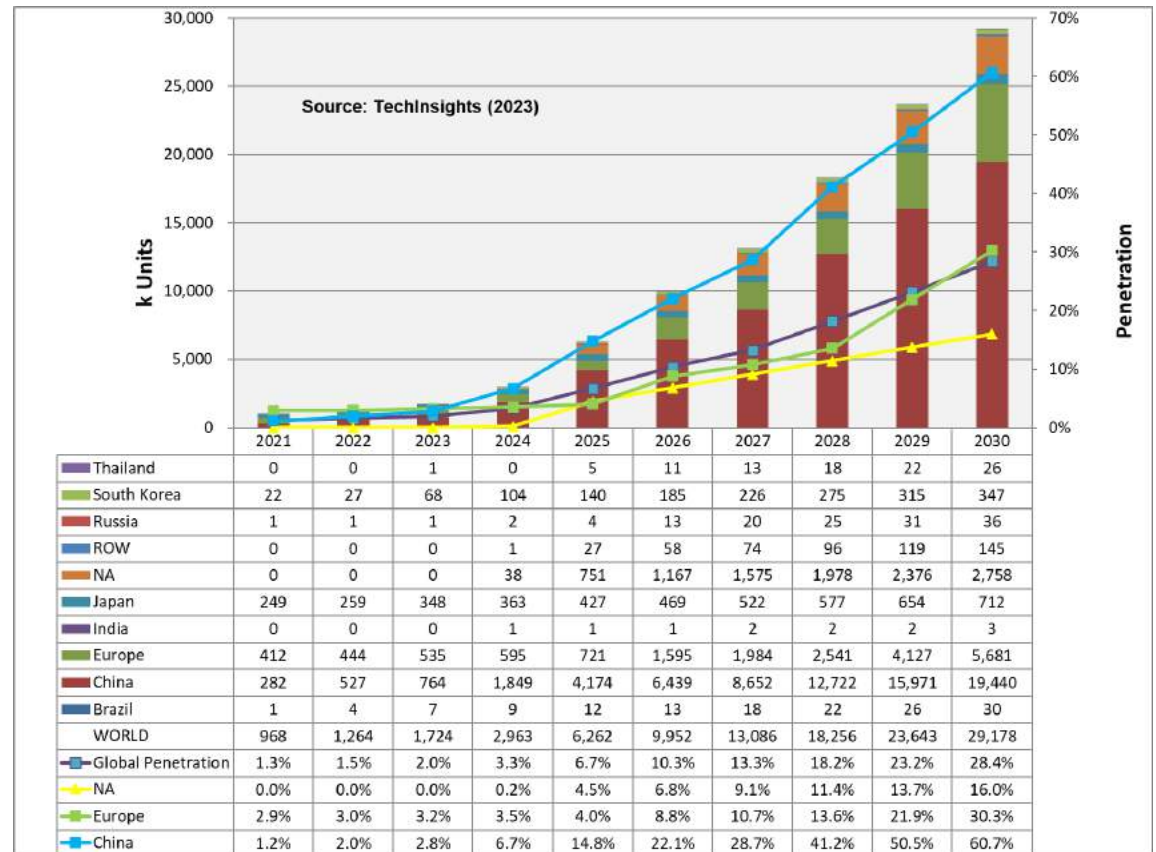
- Well over half of vehicle produced globally are now connected
- There is an increasing need for a **connection mediation gateway** capable of managing connectivity based on:
 - **Type**
 - Wi-Fi, LTE/5G, Satellite (LEO or GEO)
 - **Application**
 - Safety, streaming...
 - **Availability/Quality of signal**
 - Intermittent connectivity is a big problem for data uploads/downloads to vehicles in motion
 - **Cost**
 - Do I need this data transfer **now**? Or can it wait and be cheaper later on?



Source: [Automotive Infotainment & Telematics - Systems & Features Q3 2023](#)

V2X Forecast

- Forecast without EU or US mandate
 - 968k shipments in 2021 to 29.2M in 2030
 - C-V2X will dominate with 27M units vs. 1.2M DSRC shipments in 2030
 - Mandates in the works but timelines remain in flux
 - Without mandates, V2X will continue to flounder
- 90% of V2X deployments will be in China over the next 3-4 years
- V2X should follow closely with 5G implementation in vehicles – Ford in US?



OEM V2X (C-V2X and DSRC) Activities outside China

OEM	Technology	Regional V2X Focus	Deployments?	Example Car Models
Audi	C-V2X	U.S., Europe	US 2024-25?	N/A
BMW	C-V2X	U.S., Europe	Europe: Planned (2021) - delayed	Europe: iX
Ford	C-V2X	U.S.	Will follow 5G adoption	F150?
General Motors	C-V2X	U.S.	2025+?	Cadillac
Honda	C-V2X	U.S.	Not Announced	N/A
Hyundai-KIA	C-V2X	U.S., Korea	Not Announced	N/A
Mercedes-Benz	C-V2X	Europe	China: Planned (2025)	N/A
Nissan	C-V2X	U.S.	Not Announced	N/A
Subaru	C-V2X	U.S., Japan	Not Announced	N/A
Toyota	C-V2X, DSRC	Australia, China, Europe Japan	Japan: Deployed (DSRC), China: Pilot (C-V2X), Australia: Pilot (Both)	Japan: Crown
Volkswagen	DSRC	U.S., Europe	Europe: Deployed	Europe: Golf, ID. vehicles

C-V2X Deployments in China

Models	Technology Providers	Functions
SAIC GM Buick GL8 Avenir	Quectel automotive-grade communication modules AG15 and AG35 with optional V2X intelligent transportation technology for 10,000RMB; Qualcomm 9150 C-V2X and Qualcomm Snapdragon X5 LTE modem	EBW, CLW, AVW, ICW, SLW, SVW, HLW, GLOSA
Ford Edge Plus, Mondeo, F-150 Raptor, EVOS, Mustang Mach-E	Qualcomm 9150 C-V2X and Qualcomm Snapdragon X5 LTE modem	EBW, AVW, ICW, SVW, HLW, CLW, SLW, GLOSA
Human Horizons HiPhi X	Qualcomm Snapdragon 5G platform (SA515M), Lenovo Connect, Quectel AG550Q	Smart-road capable of V2X driving in Yancheng, Jiangsu province
SAIC Roewe Marvel R	5G V2X i-BOX by DIAS Automotive Electronic Systems Co., Ltd. Optional V2X and ADAS "R-Pilot" packet for 30,000RMB, Huawei Balong 5000, China Mobile	Covers 17 5G V2X application scenarios such as traffic light information push, stop and start guidance, curve speed warning, ICW, etc.
SAIC Audi A7 L 55 TFSI	Huawei MH5000, Huawei Balong 5000, China Unicom	5G communication as standard equipment and is set up with V2X functions for networked mobility.
GAC AION V	Huawei 5G communication module MH5000, optional V2X function packet costs 9600RMB; Huawei MH5000, Huawei Balong 5000, China Unicom	ICW, DNPW, VRUCW etc.
FAW Hongqi E-HS9	C-V2X Smart Antenna co-developed with Neusoft, Quectel automotive-grade communication modules AG15 and AG35, Qualcomm 9150 C-V2X and Qualcomm Snapdragon X5 LTE modem	FCW, Blind Spot Alert, ICW, etc.
Great Wall Motor WEY Mocca	Based on Great Wall's "Smart Coffee Platform" with Qualcomm 8155 chip, Quectel AG550Q	FCW, ICW, LCW, ROW, EBW, etc.
NIO ET7/ET5	5G-V2X including 5G-TBOX and 5G-VBOX provided by JOYNEXT	FCW, VRUCW, Traffic Light Information Push etc.
BYD Han EV	Huawei 5G communication module MH5000	V2X system includes roadside units that connect traffic lights, cameras, and speed limit signs.
Xpeng P7	u-blox F9 high precision GNSS	Smart Charging
BMW iX	5G-NR Uu Samsung/HARMAN 5G TCU	Risk assessment and blind spot information

Methodology

TechInsights conducted an online survey in March 2023 across the US (1,760 participants), Western Europe (1,730 participants) and China (1,611 participants) to examine the interest of paying for vehicle connectivity features by consumers. The question participants were presented with was:

- Q: "How would you prefer to pay for this option?"
 - Safety Package
 - Navigation Package
 - Full Self-Driving Package
 - Partial Self-Driving Package
 - Entertainment Package
 - Off road / leisure package
 - Comfort package
 - Premium Audio
 - Interior and exterior lighting packages
- The participant then was asked to select one of the following options below to complete the question:
 - Pay for it all at once
 - Pay a yearly subscription
 - Pay a monthly subscription
 - Pay a fee on only the days I use
 - I am not interested in this feature*

*Note that the percentages of respondents not interested in the features has been removed when reporting the detailed analysis by Age and Tech Group, so the percentages of respondents that would pay using the different modalities have been adjusted accordingly.



Type of Packages

1

Safety package (e.g., advanced safety systems like blind spot detection, forward collision warning, lane departure warning)



2

Navigation package (e.g., upgraded navigation system with real-time traffic, parking information, weather information)



3

Comfort package (e.g., heated seats, heated steering wheel)



4

Off-road/ leisure package (e.g., trailer assist, off-road cruise control)



5

Partial self-driving package (e.g., the vehicle can navigate by itself on highways and/or surface streets, but the driver still needs to pay attention at all times and be ready to take back control)



6

Full self-driving package (e.g., the vehicle can navigate itself on highways and/or some surface streets without requiring the driver to pay attention)

7

Entertainment package (e.g., online gaming, video streaming services, streaming media apps ALL rear seat entertainment, Wi-Fi)



8

Premium audio package (e.g. upgraded listening experience, increased customisation of audio in the vehicle)

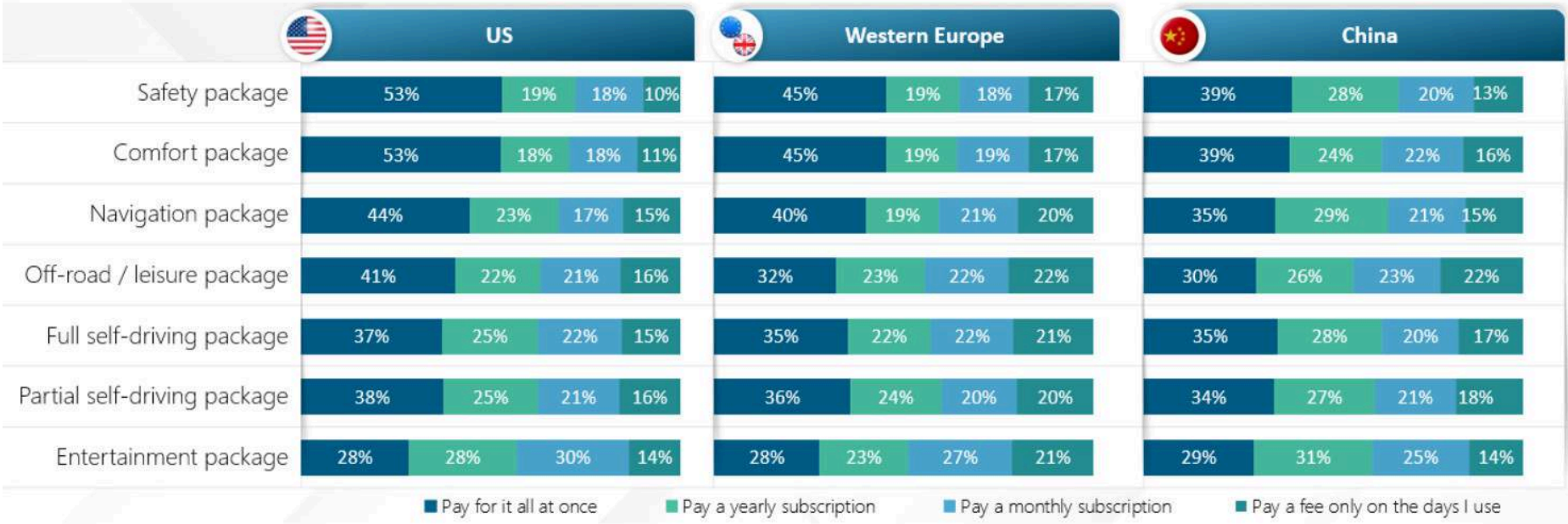


9

Interior and exterior lighting packages (e.g. additional interior lighting on the roof and integrated into the interior design of the vehicle, choice of interior light colour, personalised exterior lights, exterior light sequence on start up)



...and Connectivity Drives Subscriptions



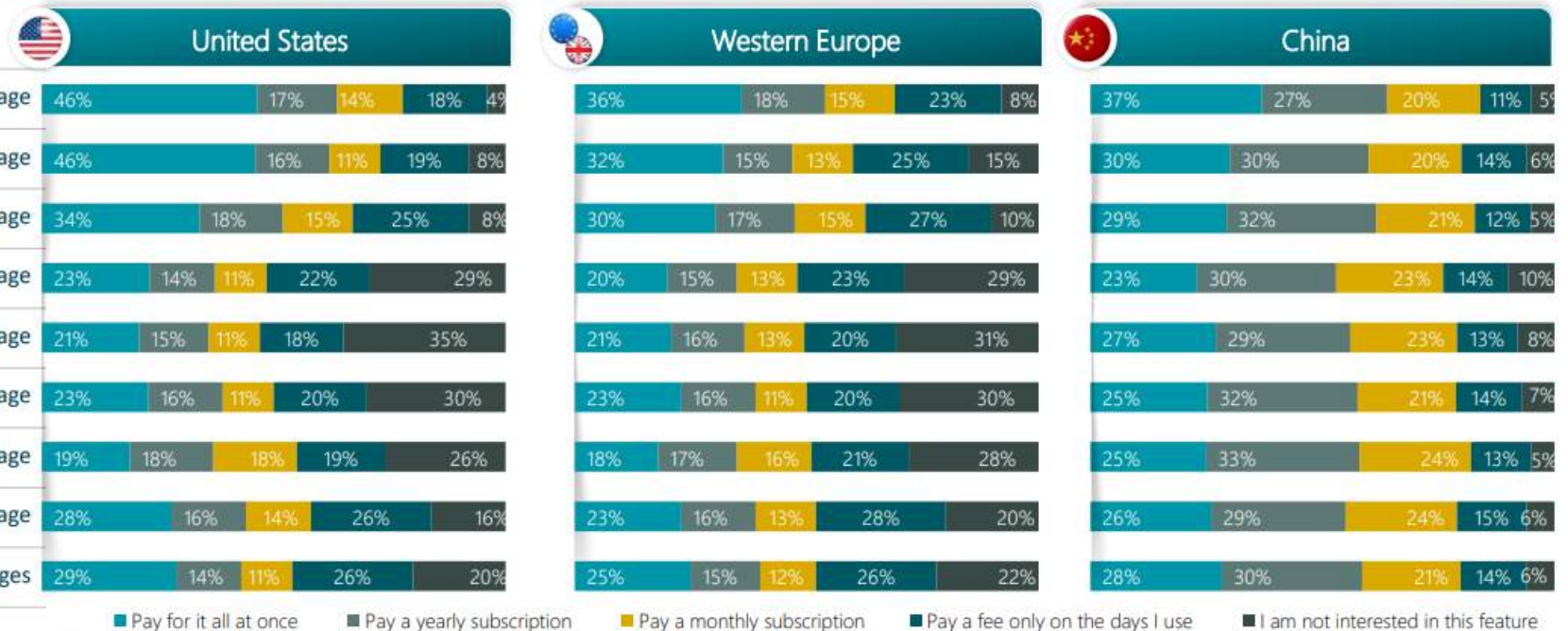
- Some consumers are very open to the subscription model – especially younger ones

Source [“In-Vehicle Feature Subscriptions: They Can Work if Done Right”](#)



Paying for Packages: By Region

Q: How would you prefer to buy the option?



Insights: In 2023, the Safety, Comfort, and Navigation packages remained of paramount importance across all regions, with at least 85% of respondents expressing an interest in these packages. However, there was a decline of approximately 5% in their overall popularity compared to the previous year's survey, except for the Comfort package, which maintained its appeal in the US. Significant disparities surfaced in the interest towards Off-road/Leisure, Full, and Partial Self-Driving packages. Approximately 30% of respondents in the US and Western Europe exhibited no interest, in stark contrast to China, where the disinterest percentage stood at a mere 10%.

Consumers show differing levels of interest in **Premium Audio and Interior & Exterior lighting**, newly added to the survey in 2023. In the US and Western Europe, the majority favoured upfront payments or pay as used, while in Chinese consumers prefer subscriptions.

Interest in Entertainment packages is high in China (95%). Conversely, the US and Western Europe witnessed an average of 27% of non-interested respondents.

Interest in individual services...study results



- **Strategy Analytics conducted a worldwide internet-based survey to investigate consumers' interest in on-board connectivity and the most important connected apps for in-car use.**
 - 4,990 car owners across the US, UK, France, Germany, Italy, and China were surveyed.
- **Parking is now the single most important issue globally, with specific needs in Western Europe and now, especially in China where it rates top of the pile.**
 - While US owners remain slightly more concerned about current traffic conditions, Western European and Chinese owners are increasingly worried about the availability of parking spaces at their destination, and for larger vehicles reserving them too.
- **Vehicle payments are gaining momentum too, be it for gas, tolls or for food.**
 - This is true across age and tech groups as barriers to trust and perceived complexity are eroded. Laggards in China lead the way in that market.
- **Differences in opinions towards being alerted about events such as traffic incidents vary a great deal, especially in younger owners, suggesting that customisable interfaces would be beneficial to tailor experiences.**
- **The appeal for management of smart-home appliances is on the increase too, especially in early adopters, and is expected to grow further.**
- **Interest in apps that increase productivity is increasing as people look to make the most of the time they spend in their vehicles, with some surprising results...**

Features

28 Features Tested



- Access local traffic conditions
- Receive alerts about traffic incidents
- Automatically predict and navigate frequently travelled routes
- Get alerts for gas prices and stations along your route
- Get alerts about weather conditions that may impact your route
- Get local weather forecast
- Find parking space availability in parking garages or parking lots / car parks near your destination
- Reserve a parking space near your destination
- Pay parking fees directly through your vehicle
- Locate nearby activities such as tourist attractions, local movie information, etc.
- Get information on local restaurants
- Access local news stories
- Read / update your social media
- Share navigation routes or points of interest with friends/contacts
- Share your location with selected friends/contacts
- Access streaming audio content (e.g. US: iHeartRadio, TuneIn Radio; Europe: TuneIn Radio; China: Qinting.FM).
- Send a destination address or name from your phone, tablet, or computer to your vehicle
- Send walking directions from your vehicle's navigation system to your mobile device
- Place a food order with a restaurant or quick food store
- Manage or monitor your home's smart thermostat, smart lighting, smart appliance, or smart TV
- Pay for gas / petrol directly through your vehicle
- Pay for roadway tolls directly from your vehicle
- Pay for food purchases at drive-through restaurants directly through your vehicle
- Read, write, and send emails
- Manage your calendar
- Create reminders / notes and access them later from your mobile device
- Stream video while vehicle is stationary, and have it automatically switch to audio once vehicle starts to move
- Play online games while vehicle is stationary

Ranked interest in connected apps

Q: Interest in information/features available through a display or the audio function in your vehicle

Ranking of Probability of Choice (1 of 2)	Overall	US	Western Europe	China
Find parking space availability in parking garages or parking lots /car parks near your destination	1	5	2	1
Automatically predict and navigate frequently travelled routes	2	2	4	2
Access local traffic conditions	3	3	3	5
Receive alerts about traffic incidents	4	1	1	7
Get alerts about weather conditions that may impact your route	5	4	6	4
Send a destination address or name from your phone, tablet, or computer to your vehicle	6	6	7	3
Get alerts for gas prices and stations along your route	7	7	5	11
Reserve a parking space near your destination	8	10	8	6
Pay for roadway tolls directly from your vehicle	9	8	9	10
Access streaming audio content	10	11	14	9
Locate nearby activities such as tourist attractions, local movie information, etc.	11	12	12	14
Pay parking fees directly through your vehicle	12	14	10	15
Get local weather forecast	13	9	11	19
Send walking directions from your vehicle's navigation system to your mobile device	14	15	15	8

Insight: Getting from A to B as efficiently as possible has always been an important issue for people. However, the issue of being able to park quickly and efficiently when they get there has become the issue they worry about most. The knowledge of where parking is available resolves a large pain point at the end of a journey. As a result, this has a big appeal for customers. Interestingly, the reservation of the space is much less important, indicating it's more about knowing where to drive and the awareness there will be a space available, rather than reserving and/or payment of the space that is key issue.

Traffic-related use cases account for the top 5 connected car apps of interest worldwide, though there are interesting regional variations.

Overall, the feature that generates the most interest is identifying parking availability at the end destination. This is the top rated in China though less so particularly in the US (ranked 5).

Being alerted about traffic incidents is the most important item in the US and Western Europe, though doesn't even rate in top 5 in China.

Other important issues focus on the route, though there are regionally specific important issues too. Gas price alerts only make the top 5 in Western Europe, while sending destination from consumer devices is much more important in China than elsewhere too.

What's missing?

- Vehicle charging priorities, concerns
- The role of generative AI
- The role of OEM mobile apps
- To app store or not to app store?
- Tokenization
- Privacy, cybersecurity
- The business model – a piece of the action
- Integration with dealers
- How to enhance the driving experience without becoming intrusive – the car as browser – the Google search effect
- Customer consent for data sharing/capture – customer control – transparency
- Distraction mitigation

TODAY'S AGENDA - AVS

01

Architecture / Software Impact Assessment

02

ADAS Demand Trends

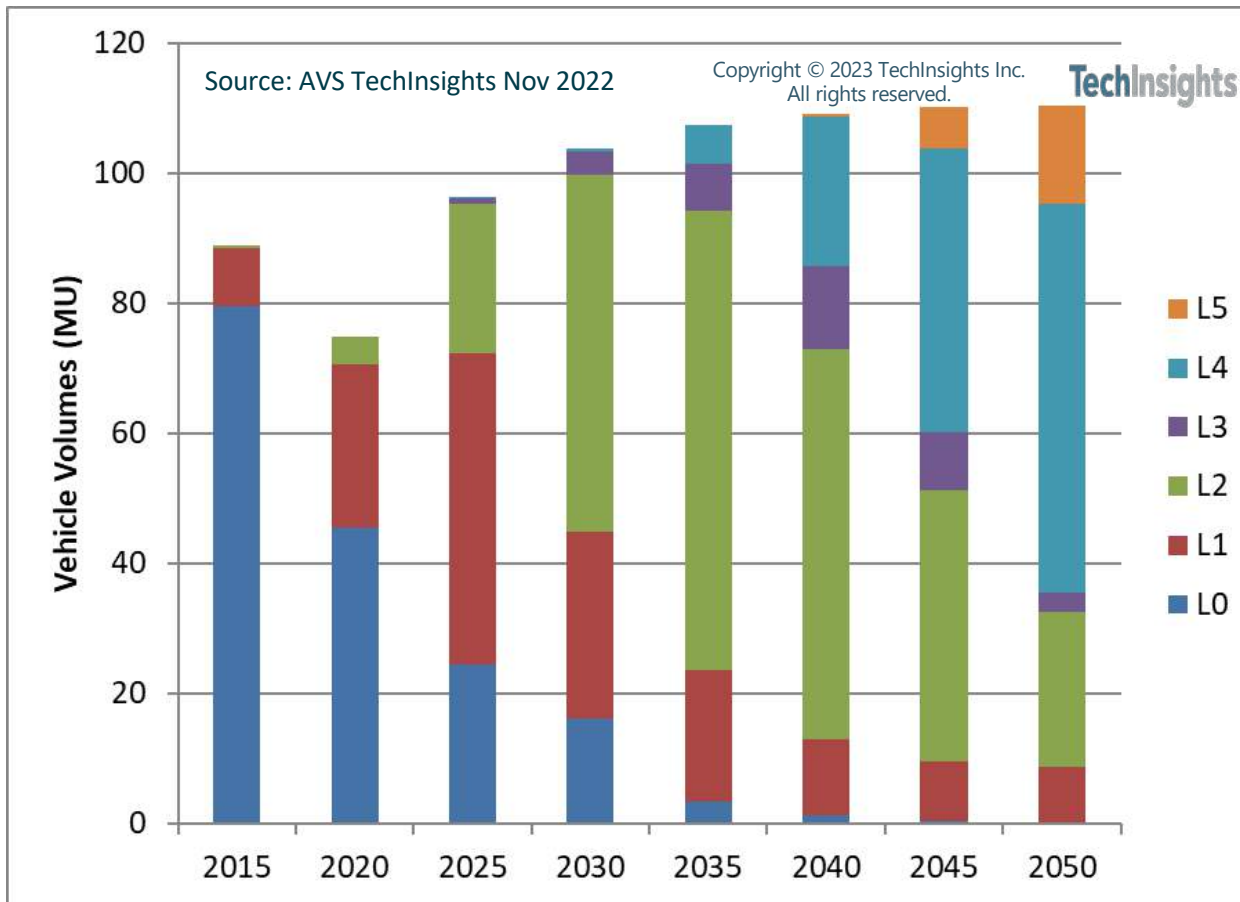
03

Autonomous Vehicles Update

05

Conclusions / Q&A

L0/L1/L2 TO DOMINATE into the 2030s



- Much ADAS (e.g. AEB) is classified as L0
- L1 demand driven mainly by LKA function (now offered by almost all LDWS solutions)
- L2 ACC and auto-park systems to grow strongly during the 2020s
- L3 now emerging – but still expected by TechInsights to be “stop-gap” solution on the path to L4
- L4 demand has been delayed in this update – many automakers pulling back

Strategies of Chip Rivals

Autonomous/Gaming/Server ⇔ Scale Down to ADAS



IVI / Smartphone ⇔ Digital Chassis ⇔ Leverage Arriver

Industry (Re) Focus on High Level ADAS (L2+, L3)



Dominant in ADAS ⇔ Vertically Integrated, becoming Tier 1 ⇔ Scale up to Autonomous

TODAY'S AGENDA - AVS

01

Architecture / Software Impact Assessment

02

ADAS Demand Trends

03

Autonomous Vehicles Update

04

Conclusions / Q&A

KEY TAKE-AWAYS

The growth in auto semiconductor demand is now primarily about content-per-vehicle and new, centralized architectures

The rapid move to electrified vehicles is behind this paradigm shift

We are now in the era of the software-defined-vehicle, which is built on connectivity

Connectivity unlocks new subscription models for *potential* monetization

Many growth projections for automated driving were over-hyped, but there ARE real opportunities

How can my organization capitalize on new, emerging business models?



techinsights.com

Thank you

Roger C. Lanctot

Director – Automotive Connected Mobility
rlanctot@techinsights.com

For more information, please contact TechInsights at info@techinsights.com



Tech Insights

**For the most trusted source of actionable, in-depth intelligence
to the semiconductor industry**

log in at library.techinsights.com

or set up a free account at techinsights.com

www.techinsights.com